

WE CLAIM

1. An apparatus, comprising:
a pixel adapted to receive light and to output a current representative of the received light; and
feedback circuitry, coupled to the pixel, adapted to receive said current and to receive a reference current and to provide a feedback signal to the pixel at least during at least a reset stage of the pixel.
2. The apparatus of claim 1 wherein the feedback circuitry comprises an amplifier.
3. The apparatus of claim 1 wherein the feedback circuitry comprises at least one current mirror circuit.
4. The apparatus of claim 1 wherein the feedback circuitry comprises an additional reference current.
5. The apparatus of claim 1 wherein the feedback circuitry further comprises a buffer that is connected between the at least one current mirror and the pixel.
6. The apparatus of claim 1 wherein the pixel comprises three transistors and a light sensitive element.
7. The apparatus of claim 1 further comprising multiple pixels and coupling circuitry for selectively coupling at least one pixel to at least one feedback circuitry.
8. The apparatus of claim 1 further comprising analog memory for storing analog signals representative of previously received light.
9. The apparatus of claim 1 wherein a reset signal value is responsive to a previous pixel output signal.
10. An apparatus comprising:
a pixel adapted to receive light and to output a pixel output signal representative of the received light; and

feedback circuitry, coupled to the pixel, adapted to receive said pixel output signal and to provide multiple feedback signals to the pixel at least during a reset stage of the pixel.

11. The apparatus of claim 10 whereas the multiple feedback signals comprise a first feedback voltage signal and a second feedback voltage signal.

12. The apparatus of claim 11 wherein the first feedback voltage signal affects a reset voltage provided to the pixel.

13. The apparatus of claim 11 wherein the second feedback voltage signal contributes to a reduction of a capacitance that contributes to a thermal noise of the pixel.

14. The apparatus of claim 10 whereas the feedback circuitry comprises multiple feedback loops.

15. The apparatus of claim 10 wherein the feedback circuitry comprises at least one current mirror.

16. The apparatus of claim 10 wherein the feedback circuitry comprises at least one amplifier.

17. The apparatus of claim 10 wherein the feedback circuitry comprises at least one current sources.

18. The apparatus of claim 10 wherein the pixel comprises three transistors and a light sensitive element.

19. The apparatus of claim 10 further comprising multiple pixels and coupling circuitry for selectively coupling at least one pixel to at least one feedback circuitry.

20. The apparatus of claim 19 wherein multiple pixels are coupled to a common resistor.

21. The apparatus of claim 10 further comprising analog memory for storing analog signals representative of previously received light.

22. The apparatus of claim 10 wherein a reset signal value is responsive to a previous pixel output signal.

23. An apparatus comprising:

multiple pixels arranged in rows and columns;

multiple feedback circuits coupled to multiple pixels; whereas at least one pixel is adapted to receive light and to output a pixel output signal representative of the received light; whereas a feedback circuit is coupled to a corresponding pixel, and is adapted to receive a respective pixel output signal and to provide multiple feedback signals to the respective pixel at least during a reset stage of the pixel.

24. The apparatus of claim 23 wherein each row of pixels is coupled to a respective feedback circuitry.

25. The apparatus of claim 23 wherein each column of pixels is coupled to a respective feedback circuitry.

26. An apparatus comprising: multiple pixels arranged in rows and columns; multiple feedback circuits coupled to multiple pixels; whereas at least one pixel is adapted to receive light and to output a pixel output current representative of the received light; whereas each feedback circuitry is coupled to a corresponding pixel, and is adapted to receive a respective pixel output current and to provide a feedback signal to the respective pixel at least during a reset stage of the pixel.

27. A method, comprising:

receiving light, by a pixel, and providing a current representative of the received light; receiving, by a feedback circuitry, said current and receiving a reference current; and

providing a feedback signal to the pixel, in response to the received currents, at least during at least a reset stage of the pixel.

28. The method of claim 27 further comprising selectively coupling at least one pixel to at least one feedback circuitry.

29. The method of claim 27 further comprising storing, at an analog memory, analog signals representative of previously received light.

30. The method of claim 26 whereas the stage of providing comprises generating the feedback signal.

31. The method of claim 30 wherein the stage of generating comprises amplifying a signal responsive to the current of the pixel and to a reference current.
32. The method of claim 30 wherein the stage of generating comprises mirroring the current provided by the pixel.
33. A method, comprising: receiving light, by a pixel, and providing a pixel output signal representative of the received light;
receiving, by a feedback circuitry, the pixel output signal; and
providing multiple feedback signals to the pixel at least during a reset stage of the pixel.
34. The method of claim 33 whereas the multiple feedback signals comprise a first feedback voltage signal and a second feedback voltage signal.
35. The method of claim 34 wherein the first feedback voltage signal affects a reset voltage provided to the pixel.
36. The apparatus of claim 34 wherein the second feedback voltage signal contributes to a reduction of a capacitance that contributes to a thermal noise of the pixel.
37. The apparatus of claim 10 whereas the feedback circuitry comprises multiple feedback loops.